

PLANNING AHEAD

Notes for the Planning Community

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Notes From Jim Johnson

Summer greetings! I have been away from the office, and primarily on the road during the past few months. I enjoyed meeting with planners from North Atlantic, Southwestern, South Pacific and Northwestern Divisions during that time, and also visited some major Corps of Engineers projects on the Mississippi, Columbia and Snake Rivers. It was a great opportunity to meet our senior planners and many of our future planning leaders.

One of the topics of continuing concern in these meetings is the fifth of my planning mission objectives – improving planning capability – and one I want to address in this issue. This is clearly a difficult problem and one that will resist simple solutions.

What is planning capability?

The role of the planner has evolved substantially over the past fifty years, especially during the period from the late 1970s through the present. Planners evolved from engineering organization roots, taking on the continually expanding requirements placed on the Corps of Engineers in formulation and economic and environmental evaluation, public involvement, and study and funds management. The role of Corps planners changed from being predominantly engineering specialists into multi-dimensional plan formulation specialists, who are required to balance technical, economic and environmental factors, public inputs, and evolving policy.

Along with these basic plan formulation skills, planners served, in their capacity as study managers, as team leaders, funds managers, and project proponents. Now, with the advent of the project management business process, these latter study management responsibilities have been assigned to project managers, and are carried out by project delivery teams.

For our purposes, the core planning capability essential for planners is the ability to formulate complex, multi-dimensional plans while

balancing technical, economic and environmental factors, public inputs, and evolving policy. In determining how to improve planning capability, we must distinguish between the core skills necessary for planners and those different skills that the project delivery team must bring to the feasibility study phase. We must focus our efforts on assuring that core project planning capability is maintained; while working to assure that adequate project delivery capability is maintained.

What happened to planning capability?

Planning capability has diminished for three primary reasons: selection of experienced planners for project management positions; net loss of experienced planning capability due to workforce mobility; and difficulty in providing planner training in a cost-sharing environment.

As should be clear from the discussion above, people with good leadership, study management and/or project-planning skills also represented talent pools for project management positions. Unfortunately, the essential role of project planners in building civil works projects and programs was overlooked when planners were placed in project management positions. Without strong planning organizations and strong planning capability, district civil works programs will decline.

Other reasons also have accounted for loss of planning capability. These include the greater mobility of the workforce, which has been exacerbated by the implementation of FERS. Fewer of our planners are likely to spend their entire career with the Corps of Engineers. Consequently, while our planners remain highly talented, core planning skills that often take years to hone have decreased.

In addition, the heavy emphasis on reducing feasibility study costs for our cost-sharing partners has reduced the opportunities for on-the-job planning training compared to fifteen years ago. Once, planning skills could be developed through patient, thorough training and mentoring. Today, many districts must assign major planning responsibilities to new employees without the benefit of seasoned guidance and mentoring.

What are we doing about it?

Loss of capability is not just a planning concern. It is also a corporate concern, because some of the same factors discussed above are affecting other Corps of Engineers capabilities. Corps senior leaders are addressing the issue of maintaining critical capabilities; and corporate performance in building present and future capability will be addressed as part of the new strategic Command Management Review (CMR+).

With specific regard to improving our planning capability, we must address the following:

- ◆ What are the types of planning skills essential to planning capability? What are the core skills for planners? What are the skills needed on the project delivery team? How will these change in the future?

- ◆ What is the proper level of expertise with these skill areas, balancing entry through senior levels? How do we address imbalances within organizations?

- ◆ What is the proper organizational framework to assess where capability should reside — district, division, other? To what extent should we include contractor capability in this assessment?


- ◆ How can we fully utilize seamless “virtual” capability? Do all skills need to be in all locations for the Corps to be fully capable?

- ◆ How can we more effectively utilize colleges, universities, and other training sources to enhance planning core capabilities, both for our new employees as well as career employees?

I will be discussing initiatives for improving planning capability with Division planning chiefs in August, and I welcome your thoughts and ideas on how we can best address this problem. Your views are important, and not just those of our experienced leaders. I would like to hear from all of you who represent our future. 📖

A Word from the Editor

Harry Kitch – CECW-PD

In order to improve our distribution of *Planning Ahead* and reach more members of the planning community, we have shifted our distribution list to a list server from the public address list. So far, we have over 350 subscribers. The challenge now is to provide material that is interesting and useful to everyone who is involved in the planning process. We are including success stories from the field, descriptions of new tools that are available to improve the quality and timeliness of our products, ideas of how planning programs can be improved and on occasion job opportunities. We also publish articles that are seeking feedback on evolving philosophy or directions and some articles challenge you to think more deeply about our organization and the work we do. 

Planning Guidance Being Updated


Lillian Almodovar – CECW-PD

Work continues at full speed on the new and improved version of the Planning Guidance Notebook (PiGeoN, PGN). (*See the February issue of Planning Ahead for the first article on this subject. Ed.*) Revisions to the notebook will be done in two phases. Phase 1 is primarily a structural revision. Our goal in Phase 1 is to create a 3-tier system of guidance. Tier 1 will address policy; philosophy and broad requirements to develop a successful planning study. The target audience for Tier 1 is planners, non-planners, managers and leaders at the Corps and outside the agency. Tier 2 will expand on the guidance provided in Tier 1 and provide more detailed procedural requirements and policies. For example, most of the information currently found in Chapters 6 and 7 of ER 100 will be incorporated into Tier 2 of the new guidance. Tier 2 will target planners and technical staffs that actually conduct the planning studies. Both, tiers 1 and 2 will have regulatory status, that is, policies and procedures

described in these two tiers will be required unless deviations are approved. Tier 3 will include the tools, models and other information available to assist in the planning effort. Tiers 1 and 2 will ultimately be divided into two sections. Section 1 will address the Corps planning process, including requirements adopted from the Principles and Guidelines (P&G) and the NEPA process and our own requirements. Section 2 will address the management of the planning program, such as, submittal of reports, milestones, schedules, budgeting, types of reports, meetings, outlines, review process, etc.

The output of Phase 1 will be a clear, easy to understand and use guidance. No changes in the current requirements contained in ER 1105-2-100 will result at the end of Phase 1, except that planning guidance issued after the publication of the last revisions to the PGN, by way of Planning Guidance Letters or other interim guidance, will be incorporated into the final product. The tiered guidance will be published in electronic format with links that will allow easy access to more or less detailed information on the subjects of interest. A draft of Tier 1 has been developed, with extensive assistance from the Institute of Water Resources (IWR), and was distributed to Division's planning chiefs for review.

Phase 2 of this effort, the procedural revision, will examine opportunities for streamlining the planning process, the management of the program and documentation requirements.

This is a more challenging and comprehensive effort that will require research and input from all those involved in the planning process. As you conduct your daily business, jot down all those ideas that come to your mind on how to improve the planning process and the management of the planning program and e-mail or fax them (202-761-0140) to us at CECW-PD. 


SPD Planning Initiatives

Ken Orth -CESPD-ET-P

The South Pacific Division is undertaking a series of initiatives for planning activities. Most of these initiatives are educational and support teambuilding in one way or another. Some are also aimed at improving efficiency - doing things faster, cheaper AND at least as good. Current initiatives are:

- One-Year Feasibility Studies - Conduct selected feasibility studies in one year to demonstrate problems and benefits with expedited studies.
- Expert Panels for Plan Formulation - In selected studies, use a panel of outside experts to develop an initial set of alternative plans.
- Integrated Decision Documents - Prepare decision documents that integrate the reporting requirements of feasibility reports, the National Environmental Policy Act, and others.
- Reviews Among Districts - Develop a procedure for each district to participate in the review of other districts' decision documents.
- Planning Lessons Learned - Capture and distribute good and bad lessons learned during planning studies.
- Website - Improve the SPD Planning page, including links with district planning sites.
- Monthly Planning Chiefs' Communications - Conduct monthly conference calls and quarterly meetings with the division and district Planning Chiefs.
- Training Workshops - Develop (where necessary) and conduct division-sponsored training workshops.

- California-Wide Water Planning Forum - Conduct a partnering meeting with other Federal and State agencies involved in water resources planning in California.
- Partnering With Fish and Wildlife Service - Conduct a regional partnering meeting with Corps offices and Fish and Wildlife Service offices.
- Attract New Planning Talent - Implement a variety of ways to identify and attract new planning talent to the districts and the division.
- Planning Presence in Every State - Support at least one planning expert in every state covered primarily by the division.
- Indefinite Delivery Order Contracts - Distribute a list of indefinite delivery order contracts for planning-related services available among the SPD districts.


We've started working on about half of these ideas and will begin the rest soon. Some initiatives will be easy to carry out; others will take more time and thought. Many are already in practice elsewhere and we'd like to build on the experiences of others. If you have any experience or other thoughts on these ideas, please let me know. Thanks. Ken Orth, CESPD-ET-P. 

HEC Vacancy Announcement

Mike Burnham- CEWRC-HEC-P

HEC has an opening for a GS-11/12 Research Hydraulic Engineer in the Planning Analysis Division. It is being filled following the departure of Dr. David Watkins who has recently accepted a faculty position at Michigan Technology University. The position is targeted to evolve into a

lead-role for Corps research, development, and applications of advanced reservoir system operations analysis using a variety of mathematical techniques such as decision theory, network flow programming, linear and dynamic programming, and Monte Carlo simulation. Previous work in this area has produced the HEC-Prescriptive Reservoir Model and Flood Control Linear Programming programs and their applications to such studies as the Missouri, Columbia, South Florida, Iowa and Des Moines, and Panama Canal systems.

Interested parties should refer to Vacancy Announcement # DY 99-297-DEA-A and either call the Sacramento Personnel Office at (916) 557-5335, connect to the USA JOBS web site at www.usajobs.opm.gov, or contact Mike Burnham at (530) 756-1104. 

Grow The Program – Existing Authority

Bob Daniel & Ken Zwickl – CECW-PF

This is an attempt to open a dialogue. You will note many sentences ending with question marks. Please don't be shy. Feedback will be greatly appreciated!

Charge

"I intend to focus our efforts, and to fully utilize all available authorities, program, special initiatives, and opportunities to build our civil works program." Jim Johnson, 6 Nov 99.

Existing Authority, Planning Assistance to States Program

(a). The Secretary of Army, acting through the Chief of Engineers, is authorized to cooperate with any State in the preparation of comprehensive plans for the development, utilization, and conservation of the water and related resources of drainage basins, watersheds, or ecosystems located within the boundaries of such State and to submit to Congress reports and recommendations with

respect to appropriate Federal participation in carrying out such plans." Sec. 22, PL 93-251.

Assessment

Our "Planning Assistance to States" is one of the programs we have, in the past, chosen to less than fully utilize. There are many reasons which could be offered for limiting its use but the authority is one which cries out to be "fully utilized".

Clearly, the Congressional intent is for the product of these studies to be comprehensive in its treatment of water and related resources. Also, it is a programmatic study authority, which maximizes our ability to manage program studies and products. Historically, we have chosen to interpret this authority narrowly by restricting the study areas and purposes to traditional Corps missions and functions. While funded at about \$2 million, the program execution was good, the product quality was good, and the state/local partner generally was well satisfied, but opportunities were limited. With the near tripling of funding in FY99 and a similar amount likely for FY00, is it possible that the PAS program has reached a saturation point for traditional mission related studies? It seems to be an appropriate time to evaluate the program potential in light of the market for the traditional products and new opportunities and challenges.

Potential


The comprehensive nature of this programmatic authority offers us the opportunity to at least identify, if not determine our destiny.

Dr. Johnson is continually looking for ideas and initiatives and speaks about this to Planners at every opportunity. Because the Corps has a greater history of dealing with urban vs. agricultural problems, and because most of the water opportunities and problems will most likely be associated with some urban watershed, one of the initiatives that he has proposed is loosely called the Urban Watershed Initiative.

What does this have to do with the PAS program? Is it possible that this broad

programmatic authority gives us an opportunity to leverage our limited CW resources? How might we make that work?

Beyond the CW program, do you see any opportunities for using the PAS program in conjunction with, for example, the Administration's Sustainable America, Livable Communities for the 21st Century, or Land Legacy initiatives, to produce a greater total product than if each initiative is pursued independently?

One scenario would have us use cost-shared PAS studies as the framework for comprehensive multi-purpose, multi-agency efforts to identify and solve regional water and related resources problems. Would this work? How would you make it work? 

Planners Recognized

Harry Kitch – CECW-PD

(Dr. Jim Johnson released the following message on 9 June 1999 - Ed.)

SUBJECT: 1998 Planning Excellence Award and the Outstanding Planning Achievement Award

1. I am pleased to announce the recipients of the 1998 Planning Excellence Award and Outstanding Planning Achievement Award.

2. The Planning Excellence Award for 1998 is awarded to Ms. Laura Hicks of the Portland District for her work on the combined Columbia River Channel Deepening Feasibility Study and Dredge Material Management Study. Ms. Hicks is commended for her efforts in providing leadership to the study team as the Project Manager and Lead Planner. She demonstrated her managerial skills by reorganizing the team and the decision making process following an arduous and contentious reconnaissance study, and her initiative by developing improved study processes and communication with the project sponsor.

3. The 1998 Planning Achievement Award goes to the Grand Forks-East Grand Forks Team, St. Paul District. The Team was responsible for providing planning assistance to the communities of Grand Forks, North Dakota and East Grand Forks, Minnesota following the devastating flood in 1997, and for preparing a decision document that allowed authorization of the project in eighteen months. Their outstanding efforts included formal partnering, early involvement of policy reviewers at all levels, intense involvement with the local sponsors, significant public education and involvement, and effective issue resolution. The team was able to accomplish effective environmental, economic and engineering studies and conduct plan formulation activities in the midst of the emotional atmosphere of flood recovery. Their ability to develop an acceptable solution to the cities' remaining flood problems is to be commended.

4. I would also like to recognize additional outstanding individuals and teams that were nominated for these awards for their valuable contributions to the Corps water resources program. The runner-up for this year's Planning Excellence Award is Mr. Stuart J. Appelbaum of the Jacksonville District for his leadership on the Central and South Florida Comprehensive Review Study. The CALFED Team from Sacramento District is the runner-up for the Outstanding Planning Achievement Award for their work in preparing the Draft Programmatic Environmental Impact Statement /Environment Impact Report.

5. Honorable Mention for the Planning Excellence Award goes to Ms. Kathryn J. Conant of Baltimore District for her efforts in developing a field assessment and data collection protocol for ecosystem restoration studies. The combined Columbia River Channel Deepening Feasibility Study and Dredge Material Management Study team from Portland District receives an Honorable Mention for the Outstanding Planning Achievement Award for their work in successfully completing a controversial study.

6. The following individuals were also nominated for the Planning Excellence Award by their Division Commanders for their significant

contributions to the Corps water resources program:

Terry A. Long	Detroit District
Jerry A. Skalak	Rock Island District
W. Michael Ternak	Los Angeles District
Kevin L. Craig	Fort Worth District

Also the following teams were nominated for the Outstanding Planning Achievement Award by their Division Commanders for their significant contributions to the Corps water resources program:

Ashtabula Comprehensive Management Plan
Buffalo District
Hazardous Substance Management System
Baltimore District
Bayou Casotte Harbor
Mobile District
Section 14 Planning Team
Little Rock District

5. All these individuals and teams are to be commended for their contributions to solving the Nation's water resources problems. Please pass along my congratulations on jobs well done.



Challenge XXI Update

Ken Zwickl - CECW-PF

Challenge XXI, or Challenge 21, formally known as the Riverine Ecosystem Restoration and Flood Hazard Mitigation Program, was included in the Corps proposed Water Resources Development Act of 1999. The provision was retained (although somewhat modified) in both the House and Senate mark-ups. That's the good news. As you may recall, we requested \$25 million for FY 1999 but were provided \$0, probably due to the lack of authorization. For FY 2000, we again requested \$25 million. The Senate mark-up has reduced that to \$0, with the House yet to act. So we wait, for both authority and appropriation.

If we are fortunate enough to receive authority and funding for this program, the funding

would be used to initiate studies, coordinate with other agencies, and develop solutions. No study areas have been identified by the Corps for initial funding. Nor have any selection or prioritization criteria been developed. However, the House and Senate have included suggested priority areas in their mark-ups of the WRDA bill. Generally speaking, a good candidate for study funding would be a watershed-based study, having 1) strong local sponsorship/support, 2) high potential for significant flood damage reduction via (mainly) nonstructural measures, 3) high potential for significant preservation/restoration of environmental functions and values, and 4) high potential for effective coordination and inclusion of other federal agency programs for flood damage reduction and environmental preservation/restoration. To be eligible for implementation funds, a project would have to present cost-effective measures that prevent flood damage to public and private infrastructure, restore functions and values to riverine ecosystems, and have strong local support.

The following is a brief synopsis of the Challenge 21 program as requested. The objectives of the program would be to expand the use of non-structural alternatives to reduce flood hazards and flood disaster recovery costs, and restore natural functions and values to riverine ecosystems.


The program would rely on the collective knowledge and expertise of Federal water resources agencies. The Corps would bring its project management experience and technical expertise in engineering, construction, emergency response and recovery, wetlands protection and restoration, environmental resources management, and other disciplines.

The program would use a watershed approach to problem-solving, would develop partnerships with other Federal, State and local government agencies, and would encompass project planning through project implementation.

The program would require active participation of and strong support by local sponsors. In addition, the primary Federal partners would be FEMA, the Department of the Interior, the Department of Agriculture, and the

Environmental Protection Agency. Agencies would use their existing statutory authorities.

The cost of the projects would be shared by the federal and local Governments. Cost sharing would be the same as for flood damage reduction projects. The federal agencies would pay 50 per cent of the cost for studies and 65 per cent for project implementation.

The POC for this program is Ken Zwickl, CECW-PF. 

Coastal America Principals Meeting

Norm Edwards - CECW-PF

A meeting of the Coastal America Principals was held on June 16, 1999 at the U.S. Department of Commerce, chaired by the Honorable Terry Garcia, Assistant Secretary of Commerce for Oceans and Atmosphere. The meeting was attended by representatives from the Departments of Agriculture, Air Force, Army (*Michael Davis, Deputy Assistant Secretary for Civil Works*), Defense (*Bruce DeGrazia, Assistant Deputy Under Secretary for Environmental Quality*), Housing and Urban Development, Interior, Navy, Transportation, and the Environmental Protection Agency.


During 1998, the Principals Group met biannually and the National Implementation Team met monthly. Various Interagency Workgroup, Regional Implementation Team, and Regional Principals meetings were held. Some 1998 highlights are: the Partnership received a Hammer Award for innovation; over 350 restoration and protection projects are underway or completed; 70 dams have been identified for removal or alteration to allow fish passage; the military has increased its involvement in Coastal America projects through the Innovative Readiness Training (IRT) (12 projects have been identified by Regional Implementation Team Chairs for potential military participation this year). (Homepage: www.coastalamerica.gov)

Dennis Barnett (CESAD-ET-PR), Chair of the Southeast Regional Implementation Team (SERIT), highlighted some advantages of Coastal America: stronger agency relationships; a broader understanding of agency programs; better program integration, and the larger number of participants which leads to more support.

Activities for 1999 include:

The 1999 Coastal America Planning Retreat will be held in Bar Harbor, Maine from September 22-24.

1999 Partnership Awards and Special Recognition Awards (Penobscot River Watershed, ME; Duck Creek, AK; Galilee, RI; Kenai River, AK; Shamrock Island Restoration, TX; Clear Creek, TX; New England Aquarium, Maine; Council of the Atlantic Salmon Federation; and Reliant Energy). A Principal will present these awards at appropriate regional ceremonies.

New Directions -- A subcommittee of Principals will meet to explore the potential for using Coastal America as an implementing structure for the Estuary Habitat Restoration Partnership Act, introduced by Senator Chafee and Representative Gilchrest. If authorized and funded, these bills would provide minimum project funding of \$315 million over five years as well as management and monitoring funding. 

Stream Corridor Restoration Demonstration Showcases Announced!

Beverly Getzen - CECW-PF

Among the 111 Key Actions included in the Clean Water Action Plan, Key Action item # 61 stated that Federal Agencies would identify 12 specific stream restoration actions to demonstrate the application of innovative stream corridor restoration technology. Some of these technologies

are those identified in the recently published Stream Corridor Restoration: Principles, Processes, and Practices handbook referred to as the "handbook". Solicitations were made back in March and, on 15 April, the interagency committee met and chose 12 from the over 75 nominations as best illustrating the concepts of stream corridor restoration. At the May CWAP meeting, the Principles enthusiastically and unanimously endorsed these showcases and signed letters to each submitting team congratulating them on these selections. These national showcases will all be highlighted on the website at <http://www.cleanwater.gov> as soon as the information and data are assembled from the nominating individuals or agencies. Plaques and certificates, along with a letter of congratulations from the CWAP Principles group, have already been sent to the teams who submitted the 12 showcases. The criteria included geographic locations and conditions, balanced management and design, strong tribal and local leadership, public and private landuse mixes, and urban interactions.

The selected showcase watersheds are listed below:

Duck Creek, AK
Big Nance Creek, AL
Gila River, AZ/NM
Suwanee River, GA/FL
Bear Creek, IA
Sun River Basin, MT
Blackfoot River, MT
Carson River, NV
McCoy Creek, OR
Lititz Run, PA
White River, VT
Duwamish-Green, WA

Duwamish-Green River, submitted by Portland District, is the only selected showcase submitted by the Corps of Engineers. Other Corps nominees were: Mid-Brazos River, TX (SWF); Tenkiller Lake, OK (SWT); and Lower Sacramento-San Joaquin, CA (SPK). The nominees will also be listed on the website as *Case Study Watersheds*.

Congratulations to Portland District for having its project selected as a national Showcase Watershed. Congratulations also to Ft. Worth,

Tulsa and Sacramento Districts for their nominations being selected as national Case Study Watersheds. Those of you involved in watershed studies may wish to contact the planning teams for more information. Names and phone numbers will be included on the website information. 📖

Working with Native Americans

Erwin Roemer - CEMVM-PM-E

We often think of government interaction between Native Americans and our agency as an activity prompted by projects affecting tribal or Federal lands. The historic removal of many Native Americans from the eastern portion of the United States has influenced modern society to maintain a notion that American Indians are mainly "out west" and indeed, this image is supported with the bulk of our nation's public lands being west of the Mississippi River. The reality is that Federally recognized tribes of Native Americans do have a strong role in our projects even when we are working on navigable waterways or private land that, for example, may be far removed from a Federally recognized tribe's modern location. Consultation is required under provisions of the National Environmental Policy Act and the National Historic Preservation Act. The basic concept is that even if a group of Native Americans no longer occupies their area of historic (or prehistoric) settlement, they may be able to provide us with important information to identify and better understand baseline environmental information, potential effects, and so on. Oral traditions, in particular, for Native Americans can provide useful information despite many years and miles of "removal" from a particular location. The burden is on us, the Corps, to seek out Native American sources of information early in the planning of our projects -- even when tribal or Federal lands are not part of a project.

An example is the Quapaw Tribe of Oklahoma. This tribe once occupied much of the present day state of Arkansas (which in fact is a Quapaw word) and nearby parts of Illinois,

Kentucky, Indiana, Tennessee, Mississippi, and an outlying area in northwestern Louisiana (where the Federal government failed in an attempt to relocate them in the 1820s). Today the Quapaw Tribe, with administration based in Quapaw, Oklahoma, is involved with consultation on environmental studies including several large projects our agency is conducting: NEPA studies focused on the Mississippi River and Tributaries Project (MRT) and the White River, Arkansas, Navigation Project (WRN). The MRT Project consists of levees and other features predominantly in a context of easements on private lands. However, there are Native American archeological deposits affected by our engineering features, even to the point where prehistoric ceremonial mounds (of interest to the Quapaw) have been incorporated in modern levee structures. The WRN Project involves a NEPA study of nearly 250 miles of the lower White River including an area of confluence with the Arkansas River (in turn joining the Mississippi River, nearby) where the Quapaw had major historic presence. 📖

Native American Culture

Paul Blakey – CECW-PC

This is the sixth in a series of articles that we are presenting on Native American culture. When working with Native Americans in our planning, operations and construction projects, one should keep in mind the culture and ideas that they share, and the government to government relationship that we have with Federally recognized Tribes. The following is extracted from course material being developed by the Department of Defense.

How many times have we heard the question in the movies or on TV...“Do you speak Indian?” As many of you know, there is no language called “Indian”, or even the politically correct, “Native American.” When Europeans arrived, there were more than 400 independent nations prospering in what is now the United States. All these independent nations spoke between 500-600 distinct languages which belonged to about 10 language families. Many of the languages and language families still exist

today. An example is the Athabascan language family which includes Navajo, Apache, Tlingit of Alaska, Alaska and Canada Athabascan languages. Even many of these are made up of tribal languages that have some commonality, but still quite different. For example, the language spoken by the San Carlos Apaches is quite different from that of the White Mountain Apache; the structure is the same, but many words are different.

During the period between 1830-1887, laws were passed to “control” Indians, and to promote “assimilation”. Two hundred schools were established to “educate” and “civilize” Indian youth. Students in the government and missionary schools were severely punished for speaking their language and practicing their traditions. Today, Indian people who speak their Native language are held in high regard. They refer to their language as Navajo, Apache, Athabascan, Tlingit, Cheyenne, etc. [Reference: EPA Resource Guide, 1998. Pevar, S.L. *The Rights of Indians and Tribes*. 1992. Southern Illinois University Press.] 📖


Watershed Analysis Software

Mike Burnham- CEWRC-HEC-P

HEC’s development of watershed modeling software continues at a brisk pace. Our objective is to produce a more integrated suite of HEC programs that may be readily tailored and applied to the watershed conditions and Corps planning study needs. The suite of software includes latest released versions of the Hydrologic Modeling System (HEC-HMS), River Analysis System (HEC-RAS), Reservoir Simulation System (HEC-RSS), Flood Damage Analysis with risk and uncertainty (HEC-FDA), and the beta version of the Flood Impact Analysis (HEC-FIA). The evolving products are being applied to selected on-going Corps planning studies.

The products enable system-wide and/or local area analysis in a broad spectrum of technical areas. These include: high and low flows; water surface profiles and spatial flood inundations;

reservoir system operations; flood damage reduction measures with risk and uncertainty; continuous or event urban and agricultural flood damage; regulatory policies; and hydrologic engineering aspects for existing or constructed wetlands studies. The watershed analysis software is functional on multi-platforms with Windows-style user interfaces. Data entry and analysis are performed from spatially referenced background maps. Present program data links are via HEC-DSS. In the future, the data manipulation and processing will be more seamless and performed under a Control and Visualization Interface designed specifically for watershed planning studies. Output consists of tables, graphics, and spatial displays which may be linked to web sites for study management and information dissemination uses.

The FY 1999 development focus is on enhancements to the individual programs and incorporation of GIS into the analytical framework. The GIS related software includes: HEC-GeoHMS for watershed basin delineation's and parameter estimations, HEC-GeoRAS for flood inundation mapping, and the Structure Inventory and Analysis program for GIS-based structure inventories and flood damage calculations. HEC is also working with the Corps' Flood Proofing Committee to incorporate nonstructural flood damage analysis into the overall framework. Future work will continue in the above areas and emphasize the assimilation of the software for watershed studies by taking advantage of the products implemented under the Corps' Water Control Data System development effort. 

Release of *IWR-PLAN* Decision Support Software

Leigh Skaggs - CEWRC-IWR-R

Developed under the Decision Support Technologies Research Program, the Corps' Institute for Water Resources (IWR) released *IWR-PLAN* Decision Support Software Version 2.1 in March 1999. *IWR-PLAN* assists in both the

formulation and comparison of alternative plans. *IWR-PLAN* can facilitate plan formulation by combining solutions to planning problems and calculating the additive effects of each combination, or "plan". *IWR-PLAN* assists plan comparison by conducting cost effectiveness and incremental cost analyses, identifying the plans which are the best financial investments and displaying the effects of each on a range of decision variables. While initially designed to support the Corps' environmental restoration and watershed planning studies, the program can be useful in planning studies addressing a wide variety of problems. USDA's Natural Resources Conservation Service, for example, has applied the program to prioritize watershed water quality improvement efforts.


IWR-PLAN builds upon the basic formulation and comparison framework of the DOS program, *ECO-EASY: Cost Effectiveness and Incremental Cost Analyses for Environmental Planning*, developed jointly by IWR and the Environmental Lab of the Waterways Experiment Station. The *IWR-PLAN* system transforms *ECO-EASY* to a Windows 95 or Windows NT operating environment while adding new functions.

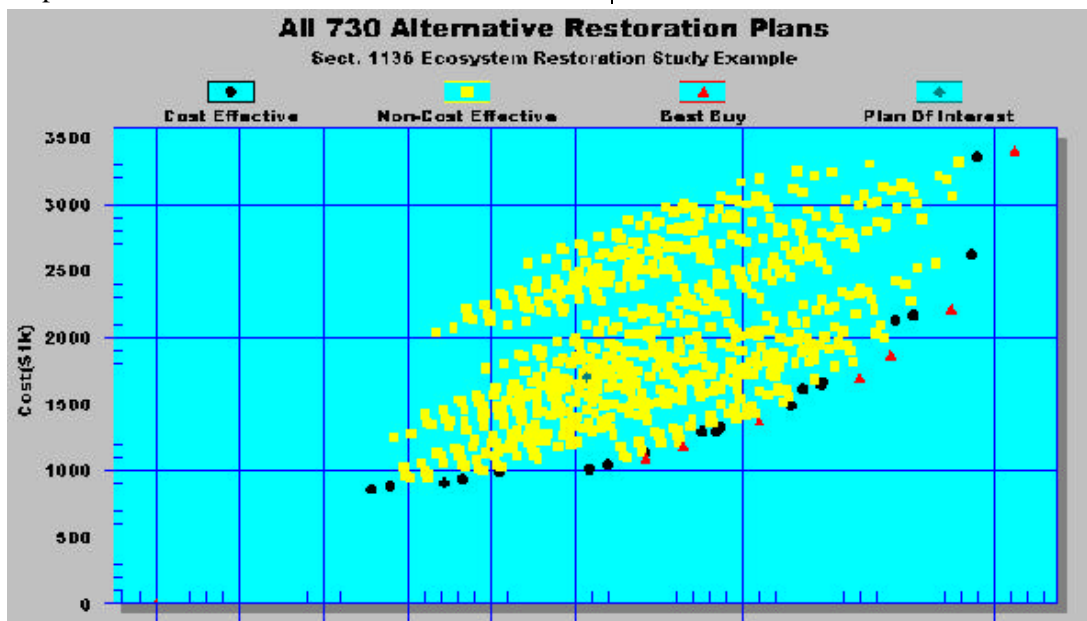
Briefly, *IWR-PLAN* requires as input user-defined solutions to planning problems and externally generated estimates of each solution's effects, and then formulates all possible combinations of those solutions. The term "solutions" refers to techniques for accomplishing planning objectives. Solutions may be either management measures (for example, clear a channel, plant vegetation, install nesting boxes, or remove a leaking storage tank); fully-formulated alternative plans (combinations of management measures); or programs (combinations of plans, often at a regional or national level). The user must define the relationships between solutions in terms of combinability and dependency; that is, which solutions are combinable with one another, and which are dependent upon others. Each solution must also be characterized in terms of estimates of its environmental or other non-monetary effects ("output" estimates, for example, habitat units, acres, stream miles) and its economic effects (cost estimate).

After building all possible combinations of solutions and calculating total cost and total output estimates for each combination, IWR-PLAN then identifies which combinations are the best financial investments through cost effectiveness and incremental cost analyses. The program first identifies the least cost combination for every possible level of output, and then identifies the cost effective set of combinations by screening out plans in which more output could be provided by another combination at the same or less cost. Once the cost-effective set of combinations is ascertained, the program calculates the incremental cost and incremental output of moving from each combination to the next larger combination. IWR-PLAN identifies the subset of the cost effective set which are most efficient in production, called the "Best Buys", as scale increases from the smallest to the largest combination.

IWR-PLAN includes many new functions. An important one is that the software can keep track of the effects of up to ten user-defined variables, including cost and output variables. This makes IWR-PLAN a useful tool in watershed scale studies where there are likely to be a wide range of effects under consideration. Other new functions include the ability to set constraints for all variables; to define derived variables (formulaic combination of other variables); to conduct sensitivity analysis; to account for "non-additive" effects; to examine different scenarios with different assumptions from one set of input data; to make comparisons across different scenarios; to exclude particular solutions from any given scenario; to track user-defined "plans of interest"; to export all IWR-PLAN data with direct links to

other software; to view results through a variety of reporting and graphing options (see sample graphical output below); and to access on-screen "help."

The software has been demonstrated at several Beta-testing workshops at Corps Districts around the country during the past year, including Portland, Philadelphia, New Orleans, and Memphis Districts, as well as Northwestern Division. IWR-PLAN is free and available to the public through the IWR-PLAN web site (accessed via <http://www.wrsc.usace.army.mil/iwr/>). The web site contains information about how to download IWR-PLAN, software capabilities and applications, software use instructions (including how to get started as well as more advanced options), frequently asked questions, a step-by-step student tutorial, and news articles. A User Manual is under development. For more information regarding IWR-PLAN or training opportunities, please contact the IWR-PLAN Program Manager, Leigh Skaggs, at 703-428-9091, or by e-mail at Lawrence.L.Skaggs@usace.army.mil. 



Inland Navigation Benefit Initiative

Paul J. Hanley, Great Lakes and Ohio River Division & Rebecca J. McClary, Huntington District

Historically Inland Navigation benefits have been estimated as the direct transportation cost savings (waterway vs. least cost overland mode alternative) evaluated across the with project and most probable without project planning scenarios. When a lock improvement reduces delays, the reduced cost of waiting in queue at the lock (measured in terms of hourly operating cost per tow) is a benefit to the new project. When the reduction in delays results in diversion of commodities from an overland mode, the direct transportation cost differences for the diverted tonnage, between the waterway and the overland mode becomes a benefit to the new project. Simply put, the accepted practice has been to compute the annualized value of direct observed transportation savings and divide by the annualized value of life cycle project costs. The result is the benefit/cost ratio (BCR) for that alternative.


This method ignores certain project benefits including the positive environmental impacts resulting from reduced traffic on overland modes (highway, rail). There are a number of embedded issues involved in evaluating these "ignored benefits". Some benefits are obviously direct while others tend to be more indirect. Some of the latter may also be characterized as "quality of life" (QOL) impacts. They result from reducing the negative externalities associated with overland modes. An example of an ignored benefit is the incremental reduction in the maintenance of an overland mode alternative (e.g., the prolonged life of the interstate highway system due to commodities moving over the inland waterways). The maintenance of the new navigation project is a project cost so the treatment of the two modes is not even-handed and the BCR is understated. Generally, QOL impacts (air quality degradation, accident risk, noise, congestion) are not thought of in terms of their economic impacts but more in terms of environmental impacts although they are

amenable to economic analysis (albeit often with great difficulty).

Other examples of "ignored benefits" which would tend to increase navigation project BCRs are related to our embedded assumptions about the availability and cost of the overland alternate to water transport. The first of these aspects, costs or rates presumes that overland carriers will continue to move commodities at rates that reflect their costs in the absence of the waterway improvement. However, we know from observing the market for rail movements that rail carriers do exercise monopoly pricing in markets where there is no viable water transport alternative. This problem which is characterized as "water compelled rates" can and often does distort shipper choices and results in an inefficient allocation of resources. To the extent that the resulting resource allocation is not optimal from a societal view, the inefficiency is a reduction in National Economic Development (NED) benefit. The second problem with our alternate mode assumption is availability or capacity. The congestion that we experience on the waterway may simply be transferred to an overland mode. Since shippers do not internalize the congestion costs, which they generate, all users of the alternate mode bear some portion of these congestion costs. These incremental highway and rail congestion costs (unlike lock delay costs) are not currently captured in our analysis. All of the above discussion relates to NED benefits. There is another class of benefits, Regional Development Benefits (RED), which are not losses or gains to the nation as a whole but which do represent losses or gains to a particular region. The importance of this benefit category lies in terms of influencing local and state governments or other potential local sponsors in determining how much they would be willing to share in project costs.

Clearly, there are areas where legitimate benefits have been ignored. We have a problem. Generally, if the public thinks about the inland navigation system at all, they would be unlikely to realize the devastating economic and QOL impacts that would be a consequence of the deterioration of the inland navigation system. Because we continue to ignore these impacts we undervalue and underinvest in water transportation improvements. The problem has never been the legitimate

economic value of these benefit classes, the problem is that these impacts are not directly observable and are therefore more troublesome to estimate.

As a result of a proposal submitted by the Great Lakes and Ohio River Division, David B. Sanford, Chief of the Policy Division tasked the Policy Studies Branch of the Institute for Water Resources to evaluate the potential for a broader interpretation of Inland Navigation benefits. An initial organizational meeting for this initiative was held in Headquarters on 23 June 1999. This meeting was hosted by the Policy Division and was attended by representatives from the Headquarters' Policy and Planning staffs, IWR, MSCs and TVA. IWR is leading the Washington level effort with assistance from a Field Evaluation Team comprised of representatives from Divisions with an active interest in Inland Navigation. TVA is also represented on this team. The staff of IWR, under the direction of Dr. Eugene Z. Stakhiv, is actively engaged in researching the full range of potential inland navigation benefits and IWR will host a workshop on this subject in early August. The point of contact for the Field Evaluation Team is Paul J. Hanley of the Great Lakes and Ohio River Division. 

Hazardous Commodity Cross-References

David E. Penick, Director, CEWRC-NDC-C

Background

In an effort to associate Waterborne Commerce Statistics Center's (WCSC) commodity codes (based upon Standard International Trade Classification, Revision 3) with hazardous commodity codes used by other Federal agencies and internationally, WCSC attempted to match WCSC codes with North American Emergency Response Guide (NAERG) guide numbers and hazard classes. WCSC enlisted the expertise of Dr. Joseph Svrbely, a Corps Senior Chemist at the U.S. Army Corps of Engineers Great Lakes and

Ohio River Division in Cincinnati, Ohio. He has succeeded in producing two products that identify which WCSC commodity codes represent hazards, and the types of hazards.

Products

One product relates selected Waterborne Commerce Statistics Center Commodity Codes to the USDOT NAERG Hazard Identification Numbers. These NAERG Identification Numbers consist of the United Nations (UN) Hazard Identification Codes used worldwide to track international hazardous material cargoes and a number of general codes to cover hazardous materials not specified by the UN Codes. The other product interrelates the WCSC Commodity Codes with the USCG Chemical Hazard Response Information System (CHRIS) Codes, the NAERG Hazard Identification Numbers, and the Chemical Abstract Service registry number (CAS). CHRIS Numbers are used within the United States by the U.S. Shipping Industry and the U.S. Coast Guard to designate hazardous cargo moving by vessel. The CAS Registry is the worldwide definitive chemical identification system.

Utility

So, how is this cross-reference used? One use is for answering requests for quantities (barge loads or tons) of hazardous cargoes passing a particular site. It also helps define what a requestor means by "hazardous". We can now strictly select commodity types that are contained in the set of "Hazardous Materials" or that are contained in the set of "Chemical Hazards" as defined by the USCG. More specifically, we can select just the commodities that are combustible, or those that are corrosive, or those that are radioactive. For example, one may want to know the average daily number of barges carrying toxic substances past the Port Aransas Wildlife Refuge in Texas. WCSC would write a query for you by selecting the number of barge trips in one or more calendar years containing commodities labeled "toxic" in the cross-reference. The same query can be done for volume. The exposure on this reach can then be compared to other locations in the nation for the selected hazard. Additionally, utilizing the Geographic Information System, one can create


flow diagrams showing the density of any one or more hazardous commodities moving on the U.S. waterways.

Feedback

These cross-references are the initial Federal effort at relating different lists of hazardous commodities, and in many cases there are one-to-many matches which cause ambiguities. In other cases, a "best" match had to be made which involved a judgement call by Dr. Svirbely. No doubt, there are some errors and omissions in these cross-reference files, and we need your input to help us find them. Therefore, we are providing these files to you and everyone via our CD-ROM (see companion article) and on our website: www.wrsc.usace.army.mil/ndc/.

We encourage your suggestions for improving this Cross Reference Guide. Please send your comments regarding the Guide to:

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1999 NDC Publications and U.S. Waterway Data CD

Bob Baldwin - CEWRC-NDC

The Water Resources Support Center's Navigation Data Center (NDC) has just released the latest version of their *NDC Publications and*

U.S. Waterway Data CD. Visit their web site to order a copy:


<http://www.wrsc.usace.army.mil/ndc/cdorder.htm>.

As in previous years, this year's disc contains all of NDC's most current hard copy publications in electronic form (Adobe Acrobat format) and aggregated U.S. Waterway data from the NDC databases and the U.S. Coast Guard. You can view these publications and most of the aggregated data with a simple point and click. The contents of the CD are viewed using your web browser by opening the *index.htm* file from the *root directory* of the CD.

Information from this CD can be used as a tool for analysis and discovery of U.S. waterborne transportation and the U.S. waterway infrastructure. The data are compiled from NDC's waterborne commerce, vessel characteristics, port facilities, dredging statistics, lock performance and characteristics, foreign traffic vessel entrances and clearances, and foreign cargo (imports and exports) databases. New additions this year include: the international classification of ships by type (ICST), the flag master file containing nationality or country of registry descriptions and the hazardous commodity cross reference file. Data about marine casualty and pollution investigations and foreign flag vessels from the U.S. Coast Guard is also included.

New this year is a free GIS data viewer included on the NDC CD as an optional component. The free ArcExplorer software is a lightweight GIS tool for visualizing and exploring the NDC geo-spatial data sets. A project file was created for this year's CD that when opened with ArcExplorer displays each NDC geo-spatial data set as a separate layer on a map of the U.S. The base layer for this project file is the National Waterway Network (NWN) which is a geographic database of navigable waterways in and around the United States developed for the Corps by Oak Ridge National Laboratory and Vanderbilt University, with input from the National Waterway GIS Design Committee.

Another source of geographic data sets about transportation facilities is the *National Transportation Atlas Databases - 1999 (NTAD99)* CD from the US-DOT's Bureau of Transportation

Statistics (BTS). The data sets include geospatial information for transportation modal networks and intermodal terminals, and related attribute information. All modes of transportation are covered - air, rail, highway, and water. The National Waterway Network, described above, is the source for the port and waterway data sets included on this CD. To obtain a copy of this CD from BTS contact (202) 366-DATA or ntad@bts.gov. 

O Tempora! O Mores!

Brad Fowler – CECW-PD

“As I went along the road by the side of the water I could see no bridge; at last I came in sight of something like a spider’s web in the air – if this be it, thought I, it will never do! But presently I came upon it, and Oh! it is the finest thing that ever was made by God or man!

What is worthy of such praise, and who could so praise it? – praise for an engineering work, a bridge; and praise from a poet, the English Romantic and Poet Laureate Robert Southey.

Scotland’s Bonar Bridge is what so impressed Southey. The creator of Bonar Bridge and over eleven hundred other bridges, plus numerous roads, canals and aqueducts was engineer Thomas Telford. In 1819, he and Southey toured many of them; Southey praised the beauty with utility of some, was awed by the “unostentatious but great, immediate, palpable and permanent utility” of others.

Here is England’s Poet Laureate praising engineering works, some of them of grand scale. Only with difficulty can one imagine other Romantic greats like Shelley and Byron doing likewise, perhaps because only with difficulty could they be got to pay attention. Still, one poet did pay attention, and it was a heady time for engineers in Britain and, soon to be, the world.

Historian Paul Johnson* says Britishers Telford, John McAdam (roads) and George

Stephenson (steam power, locomotives), and American Robert Fulton (steam ships) innovated in a period when national governments largely kept hands off engineering. This is not to say that national public works were not undertaken – Telford’s road from London to Holyhead (north Welsh coast) served to bind Britain and Ireland – but most development was for private interests, for associations (e.g., ‘turnpike’ trusts), or for local authorities. These all were listening for better ideas.

If an innovation proved out, diffusion was rapid. The year 1811 saw the first large steamboat on the Ohio-Mississippi; in 1812 war interceded; in 1816 boat building resumed, and by 1820 there were 31 steamships, 75 by 1825, and by 1830, almost 400. The cost of 100 pounds shipped from New Orleans to Louisville went from \$5 to \$2, soon to go to 25 cents.

Cost, convenience, speed and safety improvements in transportation were staggering, and what had been luxuries for the rich – or simply nonexistent – became cheap and therefore commonplace. All this efficiency with artistry was made possible by engineers. For a great many people of the Romantic Age, if not necessarily the age’s “intellectuals” – the engineer was hero.

Now jump ahead to the late 1920’s, to Europe’s largest country, which had recently “changed” governments.

“...in the course of a few years they [the Soviet communists] broke the back of the Old Russian engineers who had constituted the glory of the country, who were the beloved heroes of such writers as Garin-Mikhailovsky, Chekhov and Zamyatin.”


Aleksandr Solzhenitsyn+ also says: “...we never did trust the engineers – and from the very first years...we saw to it that [they] were kept in line by healthy suspicion and surveillance...But...the more the number of plans increased, and the more those plans overlapped and conflicted... the clearer became the old engineers’ basic commitment to wrecking, their insincerity, slyness, venality...”

In railroads, electricity, oil, textiles, coal, metallurgy, defense, machinery, shipbuilding, chemicals, mining, everywhere “there were pus-filled boils of wrecking! Enemies with slide rules were on all sides... and every day the workers gasped to learn...of new vile deeds...”

The Soviets needed blame takers, a group to be responsible for the failures that plagued the economy; this is why there was a rare *public* trial in 1930, the Promparty trial. Other “enemies of the state” were murdered or imprisoned with no or secret trials, but for these “crimes” suitable defendants were necessary. Eight engineers agreed to “testify” in exchange for their lives – and these engineers wrote the trial script, coached the prosecutors, and then acted out their parts. The script was complex and the trial took two weeks; taking blame for wrecking an entire economy required recapitulation of a national and international conspiracy. (The Promparty, or Industrial Party, was the non-existent underground of engineers and industrial managers supposedly intent on wrecking the Soviet economy.)

Based on this “evidence”, thousands of engineer “wreckers” were sent to that chain of prison camps Solzhenitsyn has named the Gulag Archipelago. But here’s the glory; many engineers, probably most, never betrayed their principles, or their colleagues. Though they soon learned that confession to “wrecking” could, might get them a reduced sentence, a “fiver” instead of a “tenner,” most didn’t betray, and for that they got the double sentence, the “tenner.”

Soviet prosecutors took two years to prepare the Promparty trial because they wanted prominent engineers to head the conspiracy – the defendants settled on were second stringers – but those ‘heads’ had too strong a will, and would not betray. These were real living people with names and they lost their lives – they were probably tortured to death. “They proved it was *possible* to resist and that it was *possible* not to give in – and thus they left behind a spotlight of reproach to shine on all the famous subsequent defendants.” Three of the heroes were P A Palchinsky, N K von Meck, A F Velichko.

This was government hands on engineering with a vengeance, and all the hero engineers, most nameless, had to wait for Solzhenitsyn to tell their story.  (*The second installment will be published in the next edition. Ed.*)

* Paul Johnson, *The Birth of the Modern: World Society 1815-1830*, Harper Collins, 1991; facts from chapter 3, which should be of special interest to engineers.


+ Aleksandr I Solzhenitsyn, *The Gulag Archipelago*, Volumes I-II, Harper & Row, 1973; facts from throughout – use index under “engineers”, “Promparty” and individual names to trace the fate of the Old Russian engineers, whom Solzhenitsyn much loved.

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Submissions Deadline

The deadline for material for the next issue is 28 July 1999. 

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